

**NATIONAL SCIENCE FOUNDATION
ARLINGTON, VA 22230**

**Engineering Directorate
Division of Industrial Innovation and Partnerships**

Report of the
Advisory Committee for
Small Business Innovation Research (SBIR) and
Small Business Technology Transfer (STTR)
Programs

May 9-10, 2012

1.0 INTRODUCTION

The National Science Foundation (NSF) Advisory Committee (AdCom) for the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs met May 9-10, 2012 in Baltimore, Maryland, at the NSF SBIR/STTR Phase II Grantees Conference.

Advisory Committee members in attendance included:

- Susan Butts
- Trish Costello
- Karen Kerr
- Mark Clevey
- Albert Johnson
- Tom Knight (Chairman)
- Angus Livingstone
- Richard Paul
- Ann Savoca
- David Spencer

Advisory Committee members absent:

- Patrick Brown
- Arlene Garrison
- Karthik Ramani
- John Tao
- E. Jennings Taylor

NSF representatives attending all or part of the meeting included:

- Kesh Narayanan, Deputy Assistant Director, ENG
- Grace Wang, Division Director, IIP
- Joseph Hennessey, Senior Advisor, IIP
- Cheryl Albus, Assessment & Diversity Program Director, IIP
- Prakash Balan, SBIR/STTR Program Director, IIP
- Juan Figueroa, SBIR/STTR Program Director, IIP
- Glenn Larsen, SBIR/STTR Program Director, IIP
- Ben Schrag, SBIR/STTR Program Director, IIP
- Ruth Shuman, SBIR/STTR Program Director, IIP
- George Vermont, SBIR/STTR Expert, IIP
- Jesus Soriano, SBIR/STTR Program Director, IIP
- Errol Arkilic, I-Corps Program Director, Office of Integrative Activities (OIA)
- Amanda May, Program Support Manager, IIP
- Caroline Hayer, Program Specialist, IIP
- Amanda Morris, IQS/EDJ contract Project Manager, IIP

2.0 AGENDA

The agenda for the meeting is included below.

<u>Wednesday, May 9th</u>			
9:00 a.m.	Welcome & Introductions (Tom Knight & Grace Wang)		
	Review & Approve Fall 2011 Meeting Minutes (Tom Knight)		
9:15 a.m.	IIP Overview (Grace Wang)		
9:45 a.m.	Industrial Innovation Leadership & Partnership (Joe Hennessey)		
	<ul style="list-style-type: none"> • A Reauthorization Review • The SBIR/STTR Budget • Quick update on USPTO pilot 		
10:45 a.m.	Break		
11:00 a.m.	Increased Commercialization		
	<ul style="list-style-type: none"> • Innovation I-Corps & integrating SBIR/STTR efforts (Errol Arkilic) • Innovation Accelerator (Joe Hennessey) 		
12:30 p.m.	Working Lunch: Break-out discussion sessions with Program Directors		
	Topic A: LEVERAGE	Topic B: LINEAGE	Topic C: COMMERCIALIZATION
	How to establish more public/private partnerships within IIP's working scope to leverage resources?	How to establish STTR and I-Corps connection to accelerate the I-Corps momentum into commercial reality?	How to scale up commercialization assistance activities to effectively reach out to more SBIR Grantees?
	Facilitator: Ben NSF: Cheryl, Jesus, AdCom: Spencer, Johnson & Livingstone	Facilitator: Errol NSF: Ruth, Glenn AdCom: Butts, Clevey & Kerr	Facilitator: Prakash NSF: Juan, George AdCom: Knight, Paul, & Savoca
2:15 p.m.	Break		
2:30 p.m.	Report out from Working Groups		
3:45 p.m.	Globally Competitive Preeminent Workforce		
	<ul style="list-style-type: none"> • Outreach Plan to Broaden Participation (Cheryl Albus) 		
3:45 p.m.	IIP Impact Assessment		
	<ul style="list-style-type: none"> • Vision of IIP's Assessment Program (Cheryl Albus) • Phase II Award Outcomes (George Vermont) 		
6:30 pm	Dinner		

Thursday, May 10th

9:00 a.m.	AdCom Deliberations
10:15 a.m.	Break
11:00 a.m.	AdCom Feedback to NSF
12:00 pm	Adjourn

3.0 COMMENTS and FEEDBACK

The AdCom considered and provided feedback on the following discussion items from the meeting agenda. We appreciate that the topics were organized within the five IIP strategic goals:

- Industrial Innovation Leadership and Partnerships
- Globally Competitive Pre-eminent Workforce
- Impacts Assessment
- Increased Commercialization
- Operational Excellence

Discussion and Approval of Minutes from Prior Meeting

After a brief discussion, the AdCom approved the minutes from the previous meetings, including the prior meeting held in October 2011.

Industrial Innovation Partnership Overview

The AdCom congratulates Grace Wang for her recent promotion to the post of IIP Division Director, and supports the vision she presented for IIP.

The AdCom appreciates the opportunity to provide its perspective not only on the SBIR/STTR program, but also on the broader IIP Division, and looks forward to continued discussions on IIP activities.

The AdCom appreciates that Grace is building on prior IIP efforts with her own perspective and vision. Past IIP leadership has built IIP's capabilities into the preeminent SBIR agency, and we expect Grace's leadership to strengthen IIP's capabilities and reputation even further. We look forward to her continued leadership.

The AdCom supports IIP's efforts to measure partnerships as an element of the NSF Strategic Performance Measurement initiative. AdCom endorses IIP's definition of partnerships as "An entity who has a financial investment in an awardee, or who is financially secured by an awardee to provide services to the awardee." We recommend IIP further define partnerships to require the existence of formal contracts that define the partnerships, and that IIP further define the data collection methodology to ensure accuracy.

Industrial Innovation Leadership & Partnership: Reauthorization Review & the SBIR/STTR Budget

The AdCom welcomes the SBIR reauthorization, and is thrilled with the expected increases in the SBIR/STTR funding levels.

The AdCom encourages IIP to continue its efforts to collaborate with the SBA and other agencies to implement the new law as quickly as possible, focusing initially on developing and thereafter receiving public comment on the Policy Directive.

Given the increased SBIR/STTR percentages included in the Reauthorization, and the increases in NSF overall budget, AdCom feels now is a critical time to revisit the IIP strategic plan to ensure it reflects the expanded funding and additional resources now available to achieve IIP's vision and mission. Specifically, AdCom recommends IIP:

- Revisit and potentially expand our larger goals and objectives,
- Project future spending, by Program,
- Add appropriate funding for administration and travel to address concerns about Program Manager workload, and
- Accelerate the investment in systems to
 - increase operating efficient to address the expanded workload, and
 - improve assessment.

The AdCom has heard the concern that IIP staff has a heavy workload, and this concern is made more acute by expected budget increases. To help to alleviate this concern, we recommend:

- Expansion of the use of virtual panels, and other techniques to refine the proposal review process, so that review panels are equally effective but with a reduced workload on the part of Program Managers. We recommend IIP volunteer to lead a virtual panel pilot, perhaps in collaboration with NSF's Working Group on the Merit Review Process, which is presenting recommendations in this area in mid-2012.
- Continued use of virtual interviews of potential Phase IIB grantees, and investigation of similar tools to improve efficiency in earlier parts of the review process.

The AdCom is pleased the reauthorization includes a provision that 3% of for administrative activities, and reaffirms its prior recommendations on how these funds can be directed as summarized in our minutes from May 2011.

The AdCom recommends that IIP prepare a 5 year projection of the total IIP budget, and include projections on

- how the 3% allocation will be used to improve administration of the SBIR/STTR program, including the increased use of travel for IIP staff to visit and manage our grantees and to build our nation's innovation ecosystem, and
- projections on how the IIP budget will be divided between all IIP Programs, and between SBIR/STTR phases and supplements.

The AdCom requests that future AdCom meetings include a review of these five-year projections, along with a review of recent history relative to prior projections. We welcome IIP leadership's perspective on the best way to structure and share the projections.

The AdCom requests that IIP notify its members when the Policy Directive is available for public comment, and looks forward to hearing an update at our next meeting.

Given the reauthorization, the AdCom endorses the decision by IIP to reintroduce selected supplements, including TECP. The AdCom is interested in learning more about the TECP supplement in future meetings.

The AdCom congratulates IIP on the creation of the excellent booklet outlining all supplements for our grantees. This booklet can be a model for future communication to our grantee community, e.g., listing forms of commercialization assistance, as discussed below.

Industrial Innovation Leadership & Partnership: US Patent & Trademark Office Pilot

The AdCom endorses IIP's pilot program with the US Patent & Trademark Office (USPTO) to streamline the patent process for NSF SBIR grantees, and looks forward to an update at our next meeting.

Increased Commercialization: Innovation I-Corps & Integrating SBIR/STTR efforts

The AdCom applauds Errol Arkilic and Rathindra DasGupta for the initial success of the new Innovation Corps Program. This program has the opportunity to greatly strengthen our nation's Innovation Ecosystem, and we look forward to hearing additional updates at our next meeting.

The AdCom endorses that the iCorps program's use of mentors to be a "force multiplier" for IIP, greatly expanding IIP's capacity to provide entrepreneurial training and education to iCorps participants. The AdCom recommends:

- iCorps add one or more people to its headcount to better communicate with and engage mentors, and to allow mentors to collaborate and network among themselves, as a way to expand our country's innovation ecosystem.
- iCorps develop mechanisms to assemble lists of interested and qualified mentors for consideration by potential/active iCorps teams, including potential mentors from underrepresented groups.
- iCorps continue to develop and begin to articulate its vision for organizing a national innovation network consisting of regional nodes that will allow the scale-up and sustainability of iCorps as an on-going national resource for innovation.
- iCorps continue its efforts to partner with private enterprise, and to leverage funding from these sources to ensure the scale-up and sustainability of iCorps.
- iCorps remain mindful of potential conflicts of interest in the governance of this public-private partnership, in consultation with the NSF General Counsel office.

The AdCom endorses the iCorps program's cap on indirect costs to \$5,000, representing 10% of the \$50,000 iCorps grant. While this 10% is smaller than other NSF programs, we agree that iCorps participants are largely "out of the lab" while participating in iCorps, and therefore indirect costs are appropriately lower for iCorps grantees.

Increased Commercialization: Innovation Accelerator

The AdCom appreciates hearing the update on the Innovation Accelerator (IA) and acknowledges the great progress made in launching this valuable commercialization assistance for our Phase 2 grantees.

The AdCom appreciates IIP's responsiveness to the reservations and concerns we expressed during our last meeting regarding potential conflicts of interest in the governance of Innovation Accelerator. We appreciate the steps IIP took to consult with the NSF General Counsel's office, and the steps taken to quickly implement the General Counsel's recommendations to reduce potential conflicts of interest in the governance of IA.

The AdCom thanks IIP for its responsiveness, and for working with our Subcommittee on Innovation Accelerator to resolve these issues to further strengthen IA.

The AdCom thanks the following members for serving on this Subcommittee, and is disbanding the Subcommittee at this time:

Mark Clevey
Trish Costello (chair)
Karen Kerr
Tom Knight
Karthik Ramani
David Spencer

Leverage: Establishing More Public/Private Partnership (Working Group Topic A)

The AdCom endorses IIP plans in this area, and thanks Ben Schrag for facilitating this discussion.

The AdCom recommends continued investigation of broader public/private partnerships, e.g., non-profits active in this area, or small/mid-sized manufacturing organizations.

Lineage: Establishing STTR and I-Corps Connection (Working Group Topic B)

The AdCom thanks Errol Arkilic for facilitating this discussion.

The AdCom observes that iCorps has the potential to accelerate the development curve for STTR grantees, because it shortens the time delay (a.k.a. Valley of Death) between research and customer validation/revenue. Another benefit is to capture and capitalize on the value of prior NSF research and lineage.

The AdCom supports IIP revise the STTR solicitation to strengthen both STTR and iCorps in the following two ways:

- to allow submission of proposals in broad topic areas
- to allow submission of STTR proposals four times per year, timed to coincide with future iCorps graduations

The AdCom recommends IIP not give preferential treatment when evaluating STTR proposals submitted by iCorps graduates, but instead gauge their proposals using the same review criteria as non-iCorps graduates.

The AdCom recommends IIP continue to allow STTR proposals from non iCorps graduates.

The AdCom did not come to consensus and needs additional clarification on the following two questions:

- Should STTR should be limited to NSF lineage?
- Can the STTR solicitation be changed to encourage teams planning to submit an STTR proposal to participate in iCorps, if eligible, as a way to train their team to prepare a strong commercialization plan?

The AdCom recommends IIP investigate methods to avoid a sharp increase in STTR submissions that might occur as a result of allowing submissions four time a year, e.g., by limiting the total number of STTR & SBIR proposal submissions from any one organization to no more than 2 per year.

Commercialization: How to Scale Up Commercialization Assistance (Working Group Topic C)

The AdCom endorses IIP plans in this area, and thanks Prakash Balan for facilitating this discussion.

The AdCom congratulates IIP in general, and Prakash in particular, for increasing the number of Industrial partners who attended the Phase II grantees conference through his interaction with IRI We encourage continued and expanded partnerships with IRI and other industry-based organizations to further expand industry interaction with grantees.

The AdCom notes that sectors outside IT are finding the current IA provider lacks contacts and networks as relevant to non-IT sectors, and recommends IIP investigate plans to broaden the assistance for sectors outside IT.

The AdCom recommends IIP more clearly articulate to grantees the types of commercialization assistance provided. We recommend IIP prepare a booklet, similar to the one they have created on supplements, that lists forms of commercialization assistance, and educates grantees on commercialization assistance opportunities.

Globally Competitive Preeminent Workforce: Outreach Plan to Broaden Participation

The AdCom thanks Cheryl Albus for beginning to lead IIP's efforts to broaden participation of underrepresented groups. We agree with her assessment that progress in this area has been disappointing to date.

We appreciate her presentation of data showing the participation of underrepresented groups in recent panels.

We endorse IIP's plans to extend the duration of its supplements to fund the work of American Society for Engineering Education (ASEE) Fellows at SBIR/STTR grantees from one year to two years.

The AdCom thanks Juan Figueroa for his work with the Engineering Directorate Diversity Working Group, and encourages further collaboration with the Engineering Directorate, the SBA, and other SBIR agencies to broaden participation.

The AdCom endorses IIP's plans to hire a Science Assistant and Einstein Fellows to continue work on this topic within IIP.

We recommend that IIP focus on increasing the number of Phase I proposals submitted from underrepresented groups. We request that IIP collect and present data tracking the number of Phase I proposals submitted from underrepresented groups in each AdCom meeting.

We continue to volunteer as needed to support these activities and will continue our Subcommittee on Outreach Activities to Broaden Participation. The Subcommittee includes:

Patrick Brown
Karen Kerr
Tom Knight
Ann Savoca

IIP Impact Assessment: Vision of IIP's Assessment Program

The AdCom welcomes Alexandria Medino-Borja as the full-time Staff Associate resource within the Engineering Directorate focused on assessment. We invite her to attend an AdCom meeting in the future so that we can learn her plans and how IIP might support them.

We welcome Alexandria's intention to use the Division Information Management System (DIMS) as the foundation for the ENG Directorate assessment.

The AdCom appreciates Cheryl Albus plans to further develop DIMS and to collaborate with the Engineering Directorate's Working Group on Assessment.

With increased funding following SBIR Reauthorization, there is increased urgency and opportunity to get this job done, as discussed above.

The AdCom looks forward to discussing DIMS at our next meeting. This tool provides great assessment opportunities within IIP and within NSF.

The AdCom endorses IIP's plans to hire a Science Assistant and Einstein Fellows to continue work on Assessment within IIP.

The AdCom continues to volunteer to assist with these efforts. Members of the Subcommittee on Assessment include:

- Karthik Ramani
- E. Jennings Taylor
- Al Johnson
- Dick Paul
- David Spencer

IIP Impact Assessment: Phase II Award Outcomes

The AdCom members thank George Vermont for his continuing success collecting assessment data from Phase II grantees, and appreciate his responsiveness to our prior recommendations.

The AdCom notes concerning recent commercialization success rates and the need for continued and expanded commercialization assistance to overcome recent economic pressures.

Operational Excellence: "Working Groups" with Program Managers

The AdCom appreciates the opportunity to spend time discussing topics with IIP Program Managers. These conversations were a highlight of the meeting, and confirm yet again the strength, dedication, and tremendous contributions from these critical members of IIP.

We encourage similar conversations with Program Managers in future meetings, and welcome input from the IIP Program Managers on topics they feel would be most valuable to discuss with the AdCom.

FUTURE MEETING

The next AdCom meeting will occur in Arlington at NSF starting 8:30 a.m. Wednesday, October 24, 2012 and ending Thursday, October 25, 2012 at noon. The meeting will be located at NSF's Stafford I Building, Room 580. A dinner will be coordinated for Wednesday evening.

To further improve our AdCom effectiveness, we request that future meetings have the bare minimum PowerPoint slides, a schedule with sufficient time for interactive sessions similar to the "working groups", and that IIP send the agenda and reading materials to all AdCom members in advance. We also endorse IIP's suggestion that the AdCom utilize on-line resources such as a SharePoint site dedicated to AdCom materials and collaboration.

Proposed Agenda:

- Operating Summary, including
 - IIP achievements and challenges since May 2012.
 - Five Year Projections on how the IIP budget will be divided between all IIP Programs, and between SBIR/STTR phases and supplements, along with a review of recent history relative.
- Update on Five IIP strategic goals, particularly in light of the increased resources provide by the Reauthorization:
 - a. Increased Commercialization
 - i. iCorps
 - ii. Innovation Accelerator
 - iii. TECP supplement
 - iv. Update on pilot program with USPTO
 - b. Industrial Innovation Leadership & Partnership
 - i. Update on Budget and the SBIR Reauthorization Policy Directive
 - c. Globally Competitive Preeminent Workforce
 - i. Outreach Activities to Broaden Participation. Please present updated data tracking the number of Phase I proposals submitted from underrepresented groups, and future plans to increase this statistic.
 - d. Operational Excellence
 - i. Discussions with Program Managers on topic(s) preselected to be of particular interest to the Program Managers. Please organize the time so all AdCom members can discuss all selected topics.
 - e. Impacts Assessment.
 - i. Impacts Assessment: Please present a demonstration of DIMS and an update on progress and plans.
 - ii. ENG Assessment & Implementation Working Group: We invite Alexandria Medino-Borja to present if possible.
- Deliberations and Report Out